J. H. KING.

Corn and Cob-Mills.

No. 133,455. Patented Nov. 26, 1872.

Fig: 1.

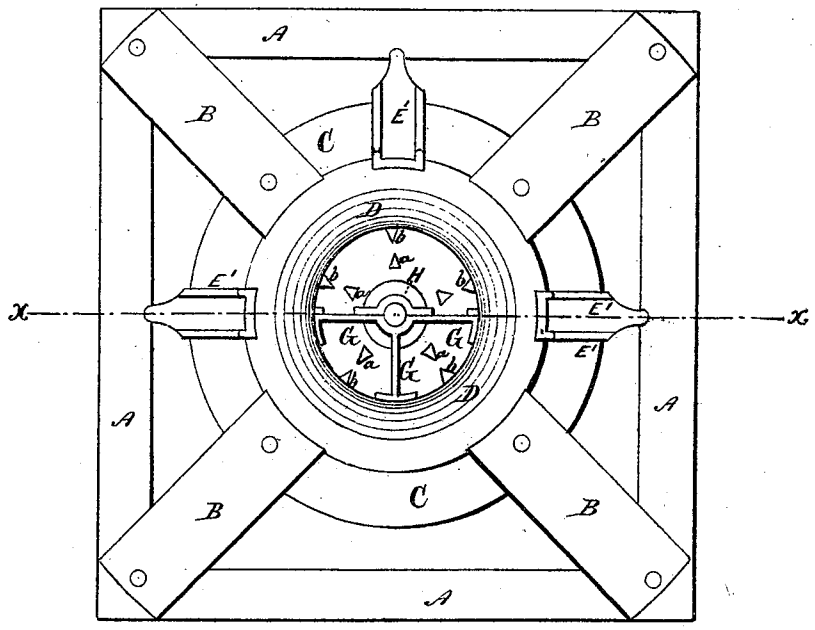


Fig: 3.

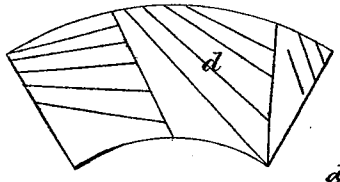


Fig: 2.

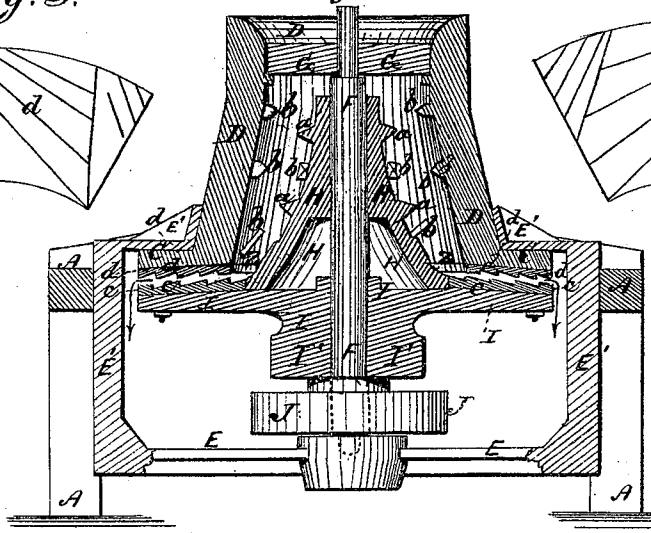
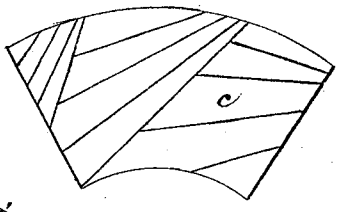


Fig: 4.



Witnesses.
Fred. Daly
John J. Dolton

Inventor.
John H. King.
By his Atty, T. A. Hopperman.

UNITED STATES PATENT OFFICE.

JOHN H. KING, OF MARTINSBURG, WEST VIRGINIA.

IMPROVEMENT IN CORN AND COB MILLS.

Specification forming part of Letters Patent No. **133,455**, dated November 26, 1872.

To all whom it may concern:

Be it known that I, JOHN H. KING, of Martinsburg, in the county of Berkeley and State of West Virginia, have made certain new and useful improvements in the construction and arrangement of a portable mill for crushing cobs and grinding grain, of which the following is a specification:

My invention relates to portable mills for crushing and grinding the cob and corn or other grain together or separately; and it consists in the arrangement hereinafter described and claimed.

In the accompanying drawing, Figure 1 is a plan or top view of my improved crushing and grinding mill. Fig. 2 is a central vertical section of the same taken in the line *x x* of Fig. 1. Fig. 3 is a view illustrating one of the series of grinding-plates secured to the base of the hopper; and Fig. 4 is a like view, illustrating the shape and dress of one of the series of grinding-plates constituting a part of the interior revolving crusher, each grinding-plate in both series being the segment of a circle, the outer rim of each set to be the same radius, though the inner rim of the lower set is somewhat greater than that of the series secured to the hopper.

A is strong rectangular frame, furnished with four or more radial braces, B, the outer ends of each being bolted to the frame and their inner ends bolted to the flange C, forming part of a central cylindrical hopper, D, by which means the hopper is rigidly secured to the main frame. A suitably-shaped casting, E, furnished with three or more vertical uprights, E′, is bolted to the outer side of case D, the lower central part of which serves as a journal-seat for the lower end of the driving-shaft F, the upper end of which has its bearing in a transverse casting, G, bolted to the inner upper orifice of hopper D, as shown in Fig. 1 of the drawing. Secured to the driving-shaft F is a central convex crusher, H, on the outer surface of which is cast a series of lugs, *a*, arranged to run in such proximity to a series of lugs, *b*, cast on the interior of hopper D, as that they approach each other in the series at or near the base, leaving, however, sufficient space at Z for the crushed substance to pass within the action of the grinding-surfaces forming a part of the base of hopper D and disk I. The shaft F is furnished with a suitable band-wheel, J, for imparting the required rotary motion to the crusher H. The disk I has a pulley, I′, on its lower surface to receive a belt for communicating motion to it, and it is rotated rapidly to effect the grinding, being mounted loosely on the shaft F, while the crusher H, being fast on said shaft, and rotated by a larger pulley, J, has a slower rotary motion. Were the motions of the disk I and crusher H at the same rate of speed the cobs would be prevented from entering between the crusher H and the teeth of the hopper. The revolving disk I is furnished on its upper face with a given number of sectional grinding-plates, *c*, bolted annularly on said disk, encircling the base of crusher H, each plate in the series being cast with a suitable dress for grinding, and slightly tapering toward their peripheries so as to conduct the ground substance and deliver it out around the circumference of disk I. Bolted to the lower face of flange C is a series of grinding-plates, *d*, in dress and outer angle of inclination similar to the angle and grinding-surface of plates *c*, and cast sufficiently wide to come, when in position, flush with the interior orifice constituting the base-opening of hopper D, so as to leave the relative difference in the width of the two series of sectional grinding-plates *c* and *d* somewhat near the space shown at Z, Fig. 1; and also illustrated by Figs. 3 and 4 of the drawing.

An important feature of this invention consists in having both stationary and rotary grinding-surfaces cast in sections, so that, at any time, when, by wear or accident, all or any one of said plates becomes injured, duplicates may be substituted therefore at comparatively a trifling cost, and with but slight expenditure of time and labor, by removing the taps used to bolt them to the flange C and disk I.

Operation.

The corn-cobs and corn or other grain is fed into the upper orifice of hopper D either separately or *en masse*, and, occupying the space therein in and around the rotary crusher H, comes in contact with the rotary teeth *a* and stationary teeth *b*, by which it becomes crushed

to a size suited to enter at the space Z and be brought within the action of the grinding-surfaces *c d*, where it is ground and delivered, as indicated by arrows shown in Fig. 2.

I contemplate locating beneath the disk I a suitable receiver to catch the ground substance as it passes out from the action of the annular grinding-surfaces forming a part of the hopper D and disk I, which may be secured to the vertical castings E′, or otherwise made to constitute a part of the main frame.

Having described my invention, I claim—

In a mill for crushing and grinding cobs, grain, &c., the arrangement of the crusher H on the shaft F rotated by the pulley J, in combination with the disk I, mounted loosely on said shaft F and driven by a smaller pulley, I′, for the purpose of securing a slower motion for the cob-crusher, in order that the cobs may enter readily, while a more rapid motion is imparted to the grinding-disk to effect the grinding, as herein shown and described.

In testimony whereof I have hereunto signed my name.

JOHN H. KING.

Witnesses:

JOHN A. BOYER,

E. S. TROXELL.